Clean copy of the allowed claims

1. A computer-implemented method of reservoir targeting, comprising:

    (a) building, from seismic data, a three dimensional model of a reservoir;

    (b) triangulating the three dimensional model of the reservoir to create a schematic model comprising a three dimensional grid of cells;

    (c) filtering the schematic model to eliminate cells with attribute values below a threshold and/or do not meet other predetermined selection criteria;

    (d) determining a set of contiguous cells for each X and Y location (selected X and Y location) in the schematic model, wherein the set of contiguous cells is determined by moving a window of a plurality of cells to select a window of a plurality of cells that has a maximum value of a sum of values of an attribute of interest, wherein the sum is taken over the cells in the selected window, the plurality of cells having the maximum value of the sum being the most desirable cells for the selected X and Y location;

    (e) recording a center of location of the most desirable cells along with an area of the cells and the maximum value of the sum of values of the attribute of interest for the selected X and Y location in a first matrix, wherein the first matrix is a two dimensional matrix;

    (f) for each cell in the first matrix, taking each cell as a selected cell, and calculating a distance weighted sum of values in the first matrix of all the cells within a multiple of a spacing radius from a center point of the selected cell, wherein a weight is

selected to give more weight to cells located closer to the selected cell and less weight to cells located further from the selected cell and entering the distance weighted sum in a second matrix as an accumulated value for the selected cell;

(g)   selecting the cell location having a maximum accumulated value in the second matrix as a target location;

(h)   setting the value of the selected cell at the target location in the second matrix and the value of all the cells in the second matrix within a multiple of the spacing radius to zero in the first matrix;

(i)   repeating steps (f) to (h) until the specified number of target locations are identified or there are no more cells with an accumulated value greater than zero.

2.   (Deleted).

3.   (Deleted).

4.   (Deleted).

5.   The method of claim 1, wherein the accumulated value (AccumValue) associated with each center location is derived using the relationship:

AccumValue = (CumWeightedValue/CumWeight) * CumWeightedArea, wherein

CumWeightedValue = Σ cellvalue*weight,

CumWeightedArea = Σ cellarea* weight, and

CumWeight = Σ (SpacingRadius - DistanceFromCell)/SpacingRadius,

where DistanceFromCell is defined as the actual distance from the cell for which the accumulated value is being calculated to a cell that is being taken into consideration and SpacingRadius is a user-defined value representing a reservoir draining radius for each target.

6.   The method of claim 1, wherein selecting target locations includes determining whether there are existing targets for the reservoir, and if existing targets are identified, eliminating possible targets within a predetermined distance from the existing targets before selecting new targets.

7.   The method of claim 6, wherein selecting target locations includes an iterative process of selecting the targets based on a first preferred attribute value, eliminating other targets within a predetermined distance from an initial target, and selecting a next preferred attribute value for a next target location.

8.   The method of claim 1, wherein selecting target locations includes an iterative process of selecting a target based on a first preferred attribute value, eliminating other targets within a predetermined distance from an initial target, and selecting a next preferred attribute value for a next target location.

9.   The method of claim 1, wherein selecting target locations further comprises ranking the selected target locations and displaying a user-selected percentage of the ranked target locations.

10.   (Deleted).

11.   A computer-readable medium having computer-executable instructions which when executed on a computer perform a process for reservoir targeting, the process comprising:

(a)   building, from seismic data, a three dimensional model of a reservoir;

(b)   triangulating the three dimensional model of the reservoir to create a schematic model comprising a three dimensional grid of cells;

(c)   filtering the schematic model to eliminate cells with attribute values below a threshold and/or do not meet other predetermined selection criteria;

(d)   determining a set of contiguous cells for each X and Y location (selected X and Y location) in the schematic model, wherein the set of contiguous cells is determined by moving a window of a plurality of cells to select a window of a plurality of cells that has a maximum value of a sum of values of an attribute of interest, wherein the sum is taken over the cells in the selected window, the plurality of cells having the maximum value of the sum being the most desirable cells for the selected X and Y location;

(e)   recording a center of location of the most desirable cells along with an area of the cells and the maximum value of the sum of values of the attribute of

interest for the selected X and Y location in a first matrix, wherein the first matrix is a two dimensional matrix;

(f)   for each cell in the first matrix, taking each cell as a selected cell, and calculating a distance weighted sum of values in the first matrix of all the cells within a multiple of a spacing radius from a center point of the selected cell, wherein a weight is selected to give more weight to cells located closer to the selected cell and less weight to cells located further from the selected cell and entering the distance weighted sum in a second matrix as an accumulated value for the selected cell;

(g)   selecting the cell location having a maximum accumulated value in the second matrix as a target location;

(h)   setting the value of the selected cell at the target location in the second matrix and the value of all the cells in the second matrix within a multiple of the spacing radius to zero in the first matrix;

(i)   repeating steps (f) to (h) until the specified number of target locations are identified or there are no more cells with an accumulated value greater than zero.

12.   (Deleted).

13.   (Deleted).

14.   (Deleted).

15. The computer-readable medium of claim 11, wherein developing the second accumulated value matrix further comprises deriving a accumulated value (AccumValue) associated with each center location using the relationship:

AccumValue = (CumWeightedValue/CumWeight) * CumWeightedArea, wherein
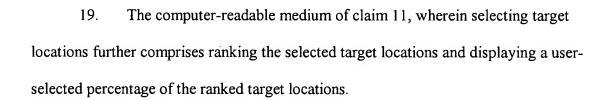
CumWeightedValue = Σ cellvalue*weight,

CumWeightedArea = Σ cellarea* weight, and

CumWeight = Σ (SpacingRadius - DistanceFromCell)/SpacingRadius,

where DistanceFromCell is defined as the actual distance from the cell for which the accumulated value is being calculated to a cell that is being taken into consideration and SpacingRadius is a user-defined value representing a reservoir draining radius for each target.

16. The computer-readable medium of claim 11, wherein selecting target locations includes determining whether there are existing targets for the reservoir, and if existing targets are identified, eliminating possible targets within a predetermined distance from the existing targets before selecting new targets.

17. The computer-readable medium of claim 16, wherein selecting target locations includes an iterative process of selecting the targets based on a first preferred attribute value, eliminating other targets within a predetermined distance from an initial target, and selecting a next preferred attribute value for a next target location.

18.   The computer-readable medium of claim 11, wherein selecting target locations includes an iterative process of selecting a target based on a preferred attribute value, eliminating other targets within a predetermined distance from a initial target, and selecting a next preferred attribute value for a next target location.

19.   The computer-readable medium of claim 11, wherein selecting target locations further comprises ranking the selected target locations and displaying a user-selected percentage of the ranked target locations.

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